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# ***WATER SUPPLY OUTLOOK FOR WESTERN UNITED STATES***

**Including Columbia River Drainage in Canada**

Prepared by

**U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE**

Collaborating with

**CALIFORNIA DEPARTMENT of WATER RESOURCES**

and

**BRITISH COLUMBIA DEPARTMENT of  
LANDS, FORESTS and WATER RESOURCES**

AS OF  
**MAY 1, 1973**

## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

## PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 511 N. W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	204 E. 5th. Ave., Room 217, Anchorage, Alaska 99501
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

## PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



# **WATER SUPPLY OUTLOOK FOR WESTERN UNITED STATES**

**Including Columbia River Drainage in Canada**

ISSUED

MAY 1, 1973

The Soil Conservation Service coordinates snow surveys conducted by its staff and many cooperators, including the Bureau of Reclamation, Corps of Engineers, Forest Service, National Park Service, NOAA, National Weather Service, Geological Survey, and other Federal Agencies, Departments of State Government, Irrigation Districts, Power Companies, and others.

The Department of Water Resources coordinates snow surveys in California.

The Water Resources Service, Department of Lands, Forests, and Water Resources directs snow surveys in British Columbia.

This report was prepared by the Water Supply Forecasting Unit, Engineering Division, Soil Conservation Service, from data supplied by Snow Survey Supervisors of the Soil Conservation Service in the States of Alaska, Arizona, Colorado and New Mexico, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

Data from California was supplied by the Chief, Water Supply Forecast and Snow Survey Unit, Department of Water Resources.

Data from British Columbia was supplied by the Chief, Hydrology Division, Water Investigations Branch, Department of Lands, Forests and Water Resources.

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
KENNETH E. GRANT, ADMINISTRATOR







# WATER SUPPLY OUTLOOK

1973 SNOWMELT SEASON

MAY 1, 1973

ALTHOUGH REASONABLY SATISFACTORY TO EXCELLENT WATER SUPPLIES ARE AVAILABLE FOR MOST MAJOR IRRIGATED AREAS OF THE WEST, WATER SHORTAGES WILL BE EXPERIENCED IN MANY SMALLER AREAS OF OREGON, WASHINGTON, IDAHO, MONTANA AND ON WYOMING'S WIND RIVER. ABOVE NORMAL RESERVOIR STORAGE WILL PARTLY OFFSET LOW STREAMFLOW. HIGH WATER PROBLEMS EXPECTED IN PARTS OF UTAH, COLORADO, NEW MEXICO AND WYOMING. PEAK RUNOFF IS OVER IN ARIZONA.

Dry April weather continued to accentuate the already low runoff prospects for the Columbia Basin and most of the Missouri Basin in Montana. In contrast, record or near record breaking snows fell on Wyoming's Laramie Range and Colorado's Gunnison River. Heavy snowfall also occurred in parts of southern Montana, on the northern end of Wyoming's Big Horn Mountains, in the Black Hills and in parts of Utah.

Unless the dry weather trend, which has persisted for most of the past four months in northern areas of the West, is broken and late spring and summer months become exceptionally wet -- such as occurred in 1968 -- irrigation water shortages will become severe during late season for water users in many smaller areas. Shortages will be particularly critical for those who obtain their water supplies by direct diversion from the streams.

The British Columbia Water Resources Service reports that snow in the Canadian part of the Columbia Basin varies from a low of 60 percent average on the Similkameen River to a high of 80 percent on the upper Columbia above the Arrow Reservoirs. The snowpack is similar in northern Washington, western Montana and south central Idaho. The snow drops to near 30 to 50 percent average on most watersheds of Oregon, central and southern Washington and northern Idaho.

Most streams in the Columbia Basin will yield 40 to 70 percent of average runoff, but range upward to near or a little above average for southern and eastern tributaries to the Snake River in Idaho and Wyoming. Flow of the Columbia River at The Dalles, Oregon should be near three-fourths normal.

In the Missouri Basin the snowpack is now maximum of record on Wyoming's Laramie Range near Casper. Runoff from streams here will be near five times their normal amounts. In contrast, forecasts for Wyoming's Wind River

range from 45 to 69 percent of average. Most streams in northern Montana are also expected to yield from 40 to 65 percent of usual amounts. Streams heading near Yellowstone Park should flow at near three-fourths to average amounts.

Flow of the North Platte and tributaries above Seminoe Reservoir should be near 15 to 25 percent above average. Tributaries to the South Platte should supply near or a little above average supplies during summer months, but can expect heavy contributions from low elevation snowpack.

With streams expected to flow at a fourth to two-thirds above normal, outlook for the Arkansas Basin is excellent. Streams in the Rio Grande Basin will flow even higher - from near one-half above normal to over twice normal.

Snow cover in the upper Colorado River Basin is near 40 to 50 percent above normal when considered as a whole, but varies from 90 percent on the upper Green River in Wyoming to 271 percent on Colorado's Dolores River. Inflow to Lake Powell for the April-July period is forecast at 137 percent of average.

The Great Basin will experience excellent water supplies, except for a small area in southern Oregon. Flooding has already damaged some cropland in southern Utah. More high water problems are probable.

The California Department of Water Resources reports that despite meager precipitation during April, an excellent winter's accumulation of snow at the higher elevations assures all areas of the State adequate surface water supplies this year. Forecasted streamflow amounts for the April through July period range from near normal in the Sacramento Valley to well above normal in the San Joaquin Valley. Reservoir storage is about average throughout the State and most major

## SUMMARY OF SNOW WATER EQUIVALENT MEASUREMENTS

MAY 1, 1973

MAJOR BASIN AND SUB - WATERSHED	WATER EQUIVALENT IN PERCENT OF:		MAJOR BASIN AND SUB - WATERSHED	WATER EQUIVALENT IN PERCENT OF:	
	LAST YEAR	AVERAGE		LAST YEAR	AVERAGE
MISSOURI BASIN			SNAKE BASIN		
Jefferson	59	87	Snake above Jackson, Wyo.	65	93
Madison	82	103	Snake above Hiese, Idaho	61	94
Gallatin	97	106	Snake abv.American Falls Res.	63	94
Missouri Main Stem	61	85	Henry's Fork	73	88
Yellowstone	79	101	Southern Idaho Tributaries	76	125
Shoshone	51	107	Big and Little Wood	60	75
Wind	69	101	Boise	49	78
North Platte	133	151	Owyhee	40	75
South Platte	132	129	Payette	42	63
			Malheur	20	35
ARKANSAS BASIN			Weiser	38	52
Arkansas	155	142	Burnt	25	35
Cucharas-Purgatoire	---	1,000	Powder	35	55
			Salmon	53	79
RIO GRANDE BASIN			Grande Ronde	45	60
Rio Grande (Colo.)	336	207	Clearwater	32	57
Rio Grande abv.Otowi Bridge	---	---			
Pecos	---	---	LOWER COLUMBIA BASIN		
			Yakima	28	39
COLORADO BASIN			Umatilla	20	35
Green (Wyo.)	60	90	John Day	20	30
Yampa - White	168	138	Deschutes	35	55
Duchesne	173	190	Hood	25	40
Price	328	171	Willamette	25	35
Upper Colorado	160	141	Lewis	27	42
Gunnison	273	160	Cowlitz	31	46
San Juan	301	158			
Dolores	1,800	271	PACIFIC COASTAL BASIN		
Virgin	505	256	Puget Sound	35	55
Gila	---	251	Olympic Peninsula	46	54
Salt	---	393	Umpqua - Rogue	30	45
			Klamath	25	35
GREAT BASIN			Trinity	210	135
Bear	80	121			
Logan	65	110	CALIFORNIA		
Ogden	137	195	CENTRAL VALLEY		
Weber	97	132	Upper Sacramento	120	110
Provo - Utah Lake	312	186	Feather	170	120
Jordan	160	208	Yuba	135	130
Sevier	387	202	American	145	115
Walker - Carson	134	128	Mokelumne	155	115
Tahoe - Truckee	123	130	Stanislaus	190	135
Humboldt	210	120	Tuolumne	200	140
Lake Co. (Oregon)	90	120	Merced	260	180
Harney Basin (Oregon)	---	---	San Joaquin	260	155
Owens (California)	175	155	Kings	335	185
			Kaweah	560	225
UPPER COLUMBIA BASIN			Tule	---	315
Columbia (Canada)	56	79	Kern	---	185
Kootenai (U.S. & Canada)	48	75			
Clark Fork	38	62	Data for California Watersheds supplied by Dept. of Water Resources, and for British Columbia Watersheds by Dept. of Lands, Forests and Water Resources.		
Bitterroot	42	70			
Flathead	47	69	Average is for 1953-67 period. California averages are for the period 1931-70. Based on Selected Snow Courses determined by Dis- tribution within the Basin, Length of Record and Repetitive Monthly Measurement Schedules.		
Spokane	22	34			
Okanogan	39	59			
Methow	42	64			
Chelan	41	66			
Wenatchee	18	32			



reservoirs are expected to fill this spring, as flood reservation space is no longer needed.

## MISSOURI BASIN

April snow accumulation was highly variable throughout the Missouri Basin. Monthly water increases of 5 to 15.5 inches of water equivalent were observed in Wyoming's Laramie Range near Casper, along the northern portion of the Big Horn Mountains, and in Montana along the northeastern face of the Beartooth Range, on the Bridger, Tobacco Root, Snowy, Crazy and the northern part of the Gallatin Mountains. The North Platte watershed and the Black Hills also received substantial snowfall during the month.

Snowpack is now maximum of record on watersheds of Wyoming's Laramie Range. Runoff to be expected from streams draining these watersheds will be near five times their normal amounts, as typified by forecasts for Deer and LaPrele creeks. Deer Creek is forecast to flow at 530 percent of average, and LaPrele Creek at 480 percent.

In sharp contrast to the water outlook on the above streams, Wyoming's Wind River at Dubois is forecast to supply less than half its normal amount (45 percent of average). With no reservoir storage in this area, late season streamflow will be considerably less than adequate. Because of heavier inflow from downstream tributaries, forecasts for the rest of the main stem Wind and Bighorn rivers are somewhat higher, the highest forecast being 69 percent for inflow to Boysen Reservoir. The Shoshone below Buffalo Bill is forecast at 73 percent of normal.

Most streams in central and northern Montana are also expected to produce much below average runoff. About 40 to 65 percent of normal flows are anticipated to come from the Marias, Sun, Teton, Dearborn, Big Hole, Jefferson, and smaller streams flowing into the Missouri below Canyon Ferry Reservoir such as the Smith, Belt and Musselshell.

Near average runoff is expected from Montana's upper Red Rock, Ruby, Madison and Gallatin river drainages. Forecasts for the Yellowstone River and its tributaries above the Bighorn range from 70 to 90 percent average.

While Tensleep and Medicine Lodge creeks are expected to produce about three-fourths of normal, remaining streams draining the Big Horn Mountains should yield from 10 percent below to 25 percent above normal amounts. Outlook for the Black Hills has also improved. Streams here should supply from 10 to 30 percent above normal.

Flow of the North Platte and tributaries above Seminoe Reservoir and the Laramie River should be near 15 to 25 percent above average. Summer flow of the main tributaries to the South Platte should be near normal. However, the low elevation snowpack (below 9,000 ft.) is near double the normal amount and could cause high water if flushed off quickly by extended warm temperatures or heavy rains.

Reservoir storage is a little below average on the Wind River system, but generally average or well above elsewhere.

## ARKANSAS BASIN

April storms resulted in stream forecasts being raised for the main Arkansas River and some of its tributaries. Low elevation snow cover is very high, particularly in Wet Mountain Valley. High water problems may develop when the snow melts.

If late spring and summer precipitation is near normal, flow of the Arkansas at Salida will be near one-fourth more than the usual amount. Runoff from the Purgatoire should be higher, about a third above average, while the heavy snowpack on the Cucharas will cause it to yield at near two-thirds above the normal flow. Flow of the Canadian River in New Mexico will also be much above normal.

Storage in John Martin Reservoir is 60 percent average. In New Mexico on the Canadian River, storage in Conchas Reservoir is much better - 126 percent of average.

Soil moisture is exceptionally high - too much so in irrigated areas where many farmers have been unable to get into their fields.

## RIO GRANDE BASIN

The Rio Grande Basin still holds an exceptionally deep snowpack at all elevations. The low elevation snowpack (below 9,000 ft.) is 150 to 200 percent of average. High elevation snow is about 150 percent.

The Rio Grande near Del Norte, Colorado is forecast to flow at 55 percent more than normal, while at Otowi Bridge, New Mexico it will be near three-fourths above average. Inflow to the river system from the Chama River should be near 62 percent above normal. Flow of the Conejos River will be a little less, but is also very high, being forecast at 48 percent above normal. Flow of the Pecos River will be very high, about 20 percent more than double its normal flow.

Carryover storage in Elephant Butte is 19

## SELECTED STREAMFLOW FORECASTS

MAY 1, 1973

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
SASKATCHEWAN				
St. Mary near Babb, Montana <u>1/</u>	385	82	May-Sept.	
UPPER MISSOURI				
Beaverhead near Grant, Montana <u>2/</u>	50	70	May-Sept.	229
Big Hole near Melrose, Montana	390	64	May-Sept.	
Jefferson at Silver Star, Montana	440	59	May-Sept.	
Madison near Grayling, Montana <u>3/</u>	380	101	May-Sept.	569
Gallatin near Gateway, Montana	437	99	May-Sept.	498
Sun at Gibson Dam, Montana <u>4/</u>	320	56	May-Sept.	716
Belt near Monarch, Montana	65	63	May-Sept.	
Marias near Shelby, Montana <u>5/</u>	230	43	May-Sept.	
Missouri near Landusky, Montana <u>6/</u>	2,400	61	May-Sept.	
near Williston, North Dakota <u>7/</u>	6,800	71	May-Sept.	
S. Fk. Musselshell above Martinsdale, Montana	24	57	May-Sept.	
Milk at Eastern Crossing, Montana	185	92	May-Sept.	
Yellowstone at Yellowstone Lake Outlet, Wyo.	585	70	April-Oct.	1,111
at Corwin Springs, Montana	1,580	88	May-Sept.	2,259
at Miles City, Montana <u>8/</u>	4,300	79	May-Sept.	
Clarks Fork near Belfry, Montana	465	83	May-Sept.	
Shoshone below Buffalo Bill Res., Wyo. <u>9/</u>	592	73	April-Sept.	894
Wind near Dubois, Wyoming	45	45	April-Sept.	150
at Riverton, Wyoming <u>10/</u>	325	50	April-Sept.	879
below Boysen Res., Wyoming <u>11/</u>	524	69	April-Sept.	
Bull Lake Creek near Lenore, Wyoming	131	74	April-Sept.	214
Little Popo Agie near Lander, Wyoming	49	115	April-Sept.	61
Tensleep near Tensleep, Wyoming	53	72	April-Sept.	92
Medicine Lodge near Hyattville, Wyoming	16	81	April-Sept.	22.4
Shell Creek near Shell, Wyoming	66	100	April-Sept.	81
Bighorn near St. Xavier <u>8/</u>	1,000	63	May-Sept.	2,032
Tongue near Dayton, Wyoming	129	125	April-Sept.	109
No. Fork Powder near Hazelton, Wyoming	8.4	90	April-Sept.	7.7
PLATTE				
North Platte at Saratoga, Wyoming	690	124	April-Sept.	
Encampment near Encampment, Wyoming	148	117	April-Sept.	131
Deer Creek at Glenrock, Wyoming	123	530	March-July	40
Laramie Riv. & Pioneer Canal, nr Woods, Wyo. <u>12/</u>	142	120	April-Sept.	114
Big Thompson at Drake, Colorado <u>13/</u>	95	95	April-Sept.	
Clear at Golden, Colorado <u>14/</u>	120	101	April-Sept.	
St. Vrain at Lyons, Colorado <u>15/</u>	70	100	April-Sept.	
Cache La Poudre near Fort Collins, Colorado <u>16/</u>	220	102	April-Sept.	
ARKANSAS				
Arkansas at Salida, Colorado <u>17/</u>	380	123	April-Sept.	
Cucharas near LaVeta, Colorado	20	167	April-Sept.	
Purgatoire at Trinidad, Colorado	60	130	April-Sept.	
RIO GRANDE				
Rio Grande near Del Norte, Colorado <u>18/</u>	680	155	April-Sept.	
at Otowi Bridge, New Mexico <u>19/</u>	885	172	March-July	
Conejos near Mogote, Colorado <u>20/</u>	270	148	April-Sept.	
El Vado Res., Inflow, New Mexico	305	162	March-July	
Pecos at Pecos, New Mexico	90	220	March-July	
UPPER COLORADO				
Colorado, Grandby Res., Inflow, Colorado <u>21/</u>	220	100	April-Sept.	
near Dotsero, Colorado <u>22/</u>	1,600	116	April-Sept.	
near Cameo, Colorado <u>23/</u>	2,500	113	April-Sept.	
near Cisco, Utah <u>24/</u>	4,255	152	April-July	1,594
Lake Powell Inflow, Arizona <u>25/</u>	8,923	137	April-July	5,578
Roaring Fork at Glenwood Springs, Colorado <u>26/</u>	900	130	April-Sept.	
Uncompahgre at Colona, Colorado	200	155	April-Sept.	

Forecasts in California provided by Department of Water Resources.  
 Average is for 1953-67 period except California, California is computed for 1921-70 period.  
 Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.  
 Explanatory Notes on Forecasts listed on Inside Back Cover.

# SELECTED STREAMFLOW FORECASTS MAY 1, 1973

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
UPPER COLORADO (continued)				
Gunnison, Blue Mesa Res. Inflow, Colorado <u>27/</u>	850	111	April-Sept.	
near Grand Junction, Colorado <u>28/</u>	1,800	158	April-Sept.	
Dolores at Dolores, Colorado	380	165	April-Sept.	
Green at Warren Bridge, Wyoming	238	74	April-Sept.	431
at Green River, Wyoming <u>29/</u>	600	64	April-Sept.	1,645
Flaming Gorge Res. Inflow, Utah <u>27/</u>	967	92	April-July	1,967
at Green River, Utah <u>30/</u>	2,747	107	April-July	2,030
North Piney at Mason, Wyoming	23.5	74	April-Sept.	51
Big Sandy near Big Sandy, Wyoming	61	115	April-Sept.	82
Yampa at Steamboat Springs, Colorado	290	112	April-Sept.	
near Maybell, Colorado	940	110	April-Sept.	
Little Snake near Dixon, Wyoming	267	103	April-Sept.	
White near Meeker, Colorado	320	109	April-Sept.	
Strawberry at Duchesne, Utah <u>40/</u>	55	138	May-July	
Duchesne near Tabiona, Utah <u>31/</u>	113	133	May-July	
at Randlett, Utah <u>40/</u>	285	125	May-July	
Lakefork below Moon Lake, Utah <u>32/</u>	76	120	May-July	
Uinta near Neola, Utah	98	128	May-July	
Whiterocks near Whiterocks, Utah	58	120	May-July	
Price, Scofield Res. Inflow, Utah <u>33/</u>	40	148	May-July	13.9
Cottonwood near Orangeville, Utah <u>34/</u>	53	129	May-July	
San Juan, Navajo Res. Inflow, New Mexico <u>27/</u>	1,050	170	April-July	259
near Bluff, Utah <u>35/</u>	1,532	172	April-July	276
Animas at Durango, Colorado	615	150	April-Sept.	
LOWER COLORADO				
Virgin near Virgin, Utah	65	295	May-June	
Little Colorado above Lyman, Arizona	22	360	April-June	0.6
Gila near Solomon, Arizona	190	549	April-May	8.1
Frisco at Clifton, Arizona	100	529	April-May	4.9
Salt at Intake, Arizona	550	423	April-May	24.6
Tonto above Roosevelt, Arizona	61	792	April-May	0.8
Verde above Horseshoe Dam, Arizona	388	774	April-May	19.1
GREAT BASIN				
Bear at Utah-Wyo. State Line	115	115	May-July	
at Harer, Idaho	225	125	April-Sept.	
Smith's Fork near Border, Wyoming	122	113	April-Sept.	175
Thomas Fork near Wyo.-Ida. State Line	37	118	April-Sept.	59
Logan near Logan, Utah <u>36/</u>	90	105	May-July	
Ogden, Pine View Res. Inflow, Utah <u>27/</u>	98	166	May-June	
Weber near Oakley, Utah	100	120	May-June	
Provo near Hailstone, Utah <u>37/</u>	90	110	May-July	
Strawberry Res. Inflow, Utah	42	137	May-July	
Utah Lake Net Inflow, Utah	190	141	May-July	135
Big Cottonwood near Salt Lake City, Utah	36	120	May-July	35
Beaver near Beaver, Utah	25	152	May-July	
Sevier near Hatch, Utah	60	222	May-July	
near Gunnison, Utah	45	209	May-July	
So. Fork Humboldt near Elko, Nevada	60	120	May-July	
Humboldt at Palisades, Nevada	150	123	May-July	
Truckee at Farad, California <u>38/</u>	255	135	May-July	
East Carson near Gardnerville, Nevada	179	125	May-July	
West Carson at Woodsfords, California	48	120	May-July	
East Walker near Bridgeport, California <u>39/</u>	70	130	May-August	
West Walker near Coleville, California	152	122	May-July	
Donner und Blitzen near Frenchglen, Oregon	39	99	May-July	
Silvies near Burns, Oregon	18.3	47	May-July	29
Chewaucan near Paisley, Oregon	27	47	May-July	55
Deep above Adel, Oregon	40	94	May-July	53
Bidwell near Ft. Bidwell, California	11	122	May-July	
Owens below Long Valley Res., California	77	123	April-July	40

Forecasts in California provided by Department of Water Resources.  
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Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.  
Explanatory Notes on Forecasts listed on Inside Back Cover.



# SELECTED STREAMFLOW FORECASTS

MAY 1, 1973

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
UPPER COLUMBIA				
Columbia at Birchbank, British Columbia <u>40/</u>	38,730	89	May-Sept.	53,649
at Grand Coulee, Washington <u>40/</u>	51,500	82	May-Sept.	77,387
below Rock Island, Washington	52,400	76	May-Sept.	89,947
Kootenai at Libby, Montana	6,200	83	May-Sept.	7,984
at Leonia, Idaho	6,850	82	May-Sept.	10,299
Blackfoot near Bonner, Montana	570	64	May-Sept.	1,280
So. Fk. Flathead nr Columbia Falls, Montana <u>40/</u>	1,410	67	May-Sept.	2,616
Flathead at Columbia Falls, Montana <u>40/</u>	4,050	69	May-Sept.	7,235
near Polson, Montana <u>40/</u>	4,550	66	May-Sept.	8,395
Clark Fork above Missoula, Montana	1,085	70	May-Sept.	2,158
near Plains, Montana <u>40/</u>	7,300	66	May-Sept.	14,526
at Whitehorse Rapids, Idaho	8,100	66	May-Sept.	
Bitterroot near Darby, Montana	305	61	May-Sept.	669
Priest near Priest River, Idaho <u>41/</u>	470	65	May-July	802
Pend Oreille below Box Canyon, Washington	8,900	64	May-Sept.	17,909
Kettle near Laurier, Washington	1,300	80	May-Sept.	2,068
Spokane at Post Falls, Idaho <u>42/</u>	1,010	48	May-Sept.	3,071
Similkameen near Nighthawk, Washington	970	68	May-Sept.	3,118
Okanogan near Tonasket, Washington	1,170	73	May-Sept.	3,603
Methow near Pateros, Washington	580	60	May-Sept.	1,818
Stehekin at Stehekin, Washington	530	64	May-Sept.	1,167
Chelan at Chelan, Washington <u>43/</u>	710	62	May-Sept.	
Wenatchee at Peshastin, Washington	965	60	May-Sept.	2,538
SNAKE				
Snake above Palisades, Res., Wyoming <u>44/</u>	2,040	80	April-Sept.	3,504
near Heise, Idaho <u>45/</u>	2,760	81	May-Sept.	4,870
near Blackfoot, Idaho <u>46/</u>	2,850	81	May-July	4,548
at Weiser, Idaho	3,250	65	May-Sept.	6,219
Grey's above Palisade, Wyoming	395	109	April-Sept.	556
Salt above Palisade, Wyoming	390	121	April-Sept.	575
Henry's Fork near Ashton, Idaho <u>47/</u>	475	93	May-Sept.	680
Teton near St. Anthony, Idaho	340	96	May-Sept.	520
Blackfoot Reservoir Inflow, Idaho	102	100	April-Sept.	
Big Lost near MacKay, Idaho <u>48/</u>	130	82	May-Sept.	164
Portneuf at Topaz, Idaho	56	100	May-Sept.	
Salmon Falls Creek nr San Jacinto, Idaho	51	110	May-Sept.	69
Big Wood, Inflow to Magic Res., Idaho <u>49/</u>	130	71	May-Sept.	222
Bruneau near Hot Springs, Idaho	155	109	May-Sept.	
Boise near Boise, Idaho <u>50/</u>	985	85	May-Sept.	
Jordan near Jordan Valley, Oregon	42	87	May-July	
Owyhee near Owyhee, Nevada <u>51/</u>	45	118	May-July	
Owyhee Res. Net Inflow, Oregon <u>27/</u>	147	92	May-July	176
Malheur near Drewsey, Oregon	13.8	42	May-July	
Payette near Horseshoe Bend, Idaho <u>52/</u>	1,190	79	May-Sept.	
Weiser above Crane Creek, Idaho <u>40/</u>	215	81	May-Sept.	
Burnt near Hereford, Oregon <u>40/</u>	3.6	25	May-July	
Powder near Sumpter, Oregon	20	52	May-July	
Eagle above Skull Creek, Oregon	133	93	May-July	
Imnaha at Imnaha, Oregon	199	88	May-Sept.	
Salmon at Whitebird, Idaho	4,890	79	May-Sept.	
Lostine near Lostine, Oregon	96	83	May-Sept.	
Grande Ronde at LaGrande, Oregon	43	43	May-July	134
Clearwater at Spalding, Idaho	4,025	59	May-Sept.	8,856
LOWER COLUMBIA				
Yakima at CleElum, Washington <u>53/</u>	380	48	May-Sept.	
near Parker, Washington <u>54/</u>	525	40	May-Sept.	
Naches near Naches, Washington <u>55/</u>	365	49	May-Sept.	

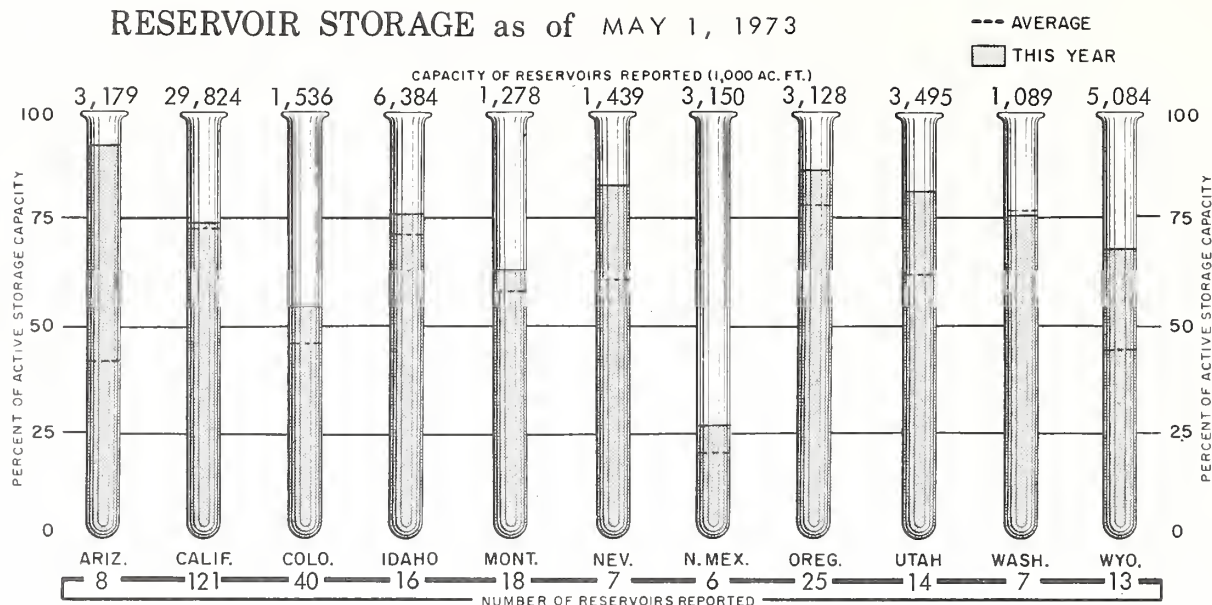
Forecasts in California provided by Department of Water Resources.  
Average is for 1953-67 period except California, California is computed for 1921-70 period.  
Forecasts assume average Effective Climate Conditions from Date Through Snow-Melt Season.  
Explanatory Notes on Forecasts listed on Inside Back Cover.

# SELECTED STREAMFLOW FORECASTS MAY 1, 1973

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
LOWER COLUMBIA (continued)				
Walla Walla, So. Fk. near Milton, Oregon	28	75	May-July	51
Umatilla at Pendleton, Oregon	42	56	May-July	97
John Day, Middle Fork at Ritter, Oregon	45	65	May-July	
North Fork at Monument, Oregon	217	60	May-July	
Crooked near Post, Oregon	18	47	May-July	
Deschutes at Benham Falls, Oregon 40/	250	82	May-July	
Columbia at The Dalles, Oregon 40/	69,350	75	May-Sept.	119,696
	83,133	76	January-July	151,348
Hood near Tucker Bridge, Oregon 40/	104	55	May-July	
McKenzie near Vida, Oregon	454	60	May-July	
Santiam, South, at Waterloo, Oregon	188	56	May-July	
North, at Mehama, Oregon 40/	282	55	May-July	
Clackamas at Estacada, Oregon	273	60	May-July	
Willamette at Salem, Oregon 40/	1,544	55	May-July	
Lewis at Ariel, Washington 56/	535	56	May-Sept.	
Cowlitz at Castle Rock, Washington 57/	1,340	63	May-Sept.	
NORTH PACIFIC COASTAL				
Dungeness near Sequim, Washington	105	69	May-Sept.	
Umpqua, No., near Toketee Falls, Oregon 40/	103	70	May-Sept.	
Rogue at Raygold, Oregon	369	70	May-July	634
Klamath Lake, Net Inflow, Oregon	230	55	May-Sept.	389
Trinity at Lewiston, California	800	130	April-July	479
CALIFORNIA CENTRAL VALLEY 40/				
Sacramento, Inflow to Shasta, California	1,750	99	April-July	1,621
Feather near Oroville, California	2,150	115	April-July	1,198
Yuba at Smartville, California	1,030	95	April-July	760
American, Inflow to Folsom Res., Calif.	1,330	101	April-July	916
Cosumnes at Michigan Bar, California	210	145	April-July	65
Mokelumne, Inflow to Pardee Res., Calif.	550	118	April-July	316
Stanislaus, Inflow to Melones Res., Calif.	820	114	April-July	456
Tuolumne, Inflow to Don Pedro Res., Calif.	1,310	110	April-July	722
Merced, Inflow to Exchequer Res., Calif.	700	115	April-July	371
San Joaquin, Inflow to Millerton Lake, Calif.	1,540	129	April-July	701
Kings, Inflow to Pine Flat Res., California	1,760	151	April-July	537
Kaweah, Inflow to Terminus Res., California	440	162	April-July	93
Tule, Inflow to Success Res., California	130	220	April-July	7
Kern, Inflow to Isabella Res., California	735	176	April-July	118
ALASKA				
Chena at Fairbanks, Alaska	545	104	May-June	524
Salcha near Salchaket, Alaska	580	99	May-June	699

Forecasts in California provided by Department of Water Resources.  
Average is for 1953-67 period except California, California is computed for 1921-70 period.  
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.  
Explanatory Notes on Forecasts listed on Inside Back Cover.

## RESERVOIR STORAGE as of MAY 1, 1973



percent above average, while in El Vado the storage is 18 percent below average.

All streams in the state are expected to yield much above average flows. Problems in managing the high water will be accentuated if temperatures are abnormally warm during the main snowmelt period, or if heavy precipitation is experienced when the snow is ripe and melting heavily.

### COLORADO BASIN

With the exception of the upper Green River in Wyoming, where dry April weather lowered runoff prospects, most other areas of the Upper Colorado River Basin experienced above average snow accumulation during the month. On the Gunnison River in Colorado the snow-pack increased as much as 60 percent. Temperatures were below normal and retarded snow-melt.

As usual, there is considerable variation in snow cover in the Basin. It varies from a low of 90 percent on the Green River in Wyoming to a high of 271 percent on the Dolores River. For the Basin as a whole it is near 140 to 150 percent normal.

Lowest streamflow forecasts in the Basin are on the Green River and its western tributaries above Green River, Wyoming. These streams are expected to yield from about 65 to 75 percent of normal amounts. Because of heavier inflow from the Uinta Mountains, inflow to Flaming Gorge is forecast at 92 percent. All other streams in the Colorado River Basin, both Upper

and Lower Basin, will yield average or higher flows.

Flow at Green River, Utah should be near 107 percent, while at Cisco, Utah the Colorado River is forecast at 152 percent average. Forecast for the San Juan River near Bluff, Utah is still higher, at 172 percent average. Combined flow of these three main tributaries indicates a prospective April-July inflow to Lake Powell of 8,923,000 acre-feet, or 137 percent of average.

With many streams in southwestern Colorado and in Utah expected to flow from a third above to twice normal amounts, problems from damaging high water can be expected.

In the Lower Colorado Basin the streamflow forecasts range from about 3 to 8 times the normal amount. In Utah the Virgin River near Virgin is forecast at 295 percent, while the Santa Clara is forecast at 583 percent. The Arizona water supply is assured, with most reservoirs at maximum operating levels.

The May 1st snow cover is phenomenally high in the Lower Basin. Typical of conditions is the Long Flat snow course in southern Utah. Ordinarily it has a May 1st water content of 0.4 inches, but this year recorded 18.1 inches snow water.

The total January-May runoff of the Salt River Project streams will be about four times average, amounting to about 2 million acre-feet. This will be the heaviest runoff since 1941.



## STORAGE IN LARGE RESERVOIRS

MAY 1, 1973

BASIN AND NAME OF RESERVOIR	CAPACITY (1,000 A.F.)	STORAGE (1,000 A.F.)	STORAGE PERCENT AVERAGE	BASIN AND NAME OF RESERVOIR	CAPACITY (1,000 A.F.)	STORAGE (1,000 A.F.)	STORAGE PERCENT AVERAGE
UPPER MISSOURI				UPPER COLUMBIA			
Belle Fourche	185	158	142	Chelan	676	195	93
Boysen	550	289	82	Coeur d'Alene	225	116	40
Buffalo Bill	373	143	115	Duncan	1,347	49	--
Canyon Ferry	2,043	1,565	100	Flathead	1,791	674	72
Fort Peck	19,410	16,140	144	Hungry Horse	3,428	2,054	104
Garrison	24,790	20,217	182	Kootenay	673	127	28
Hebgen	377	257	131	Lake Koocanusa	4,965	389	--
Keyhole	192	163	418	Lower Arrow	3,083	137	25
Lake Francis Case	5,816	4,047	104	Noxon Rapids	335	58	40
Lake Sharp	1,900	1,755	425	Pend Oreille	1,155	411	83
Oahe	23,630	19,615	153	Roosevelt	5,232	-42.5	--
Tiber	1,347	498	76	Upper Arrow	4,061	37	3
Bighorn	1,356	941	128				
PLATTE				LOWER COLUMBIA			
City of Denver (5)	518	404	105	Cougar	155	101	--
Colo-Big Thompson (3)	718	617	140	Detroit	300	178	77
Glendo	784	447	110	Green Peter	270	216	--
Pathfinder	1,016	913	208	Hills Creek	200	142	87
Seminole	1,010	621	207	Lookout Point	337	153	53
				Prineville	153	151	103
ARKANSAS				Wickiup	200	184	95
Conchas	273	189	126	Yakima Res. (5)	1,066	803	98
John Martin	354	41	60				
RIO GRANDE				SNAKE			
Elephant Butte	2,195	382	119	American Falls	1,700	1,127	68
El Vado	195	74	82	Anderson Ranch	423	314	111
UPPER COLORADO				Arrowrock	287	283	123
Blue Mesa	830	309	---	Brownlee	980	831	173
Flaming Gorge	3,749	3,063	---	Cascade	653	395	121
Navajo	1,696	1,174	---	Jackson	847	647	148
Powell	25,002	11,251	---	Lucky Peak	278	246	167
Starvation	152	121	---	Owyhee	715	714	134
				Palisades	1,200	976	121
LOWER COLORADO				Warm Springs	191	128	93
Havasu	619	599	101				
Mead	26,159	20,932	131	Clair Engle	2,448	2,214	97
Mohave	1,810	1,604	93	Clear Lake	440	325	122
Salt River Res. (4)	1,755	1,695	163	Nacimiento	350	313	157
San Carlos	949	770	683	Ross	1,203	722	104
Verde River Res. (2)	318	310	229	Upper Klamath	584	516	99
GREAT BASIN							
Bear	1,421	1,127	118	CALIFORNIA CENTRAL VALLEY			
Lahontan	314	256	115	Almanor	1,036	802	102
Rye-Patch	179	190	229	Berryessa	1,602	1,607	102
Sevier Bridge	236	162	171	Bullards Bar	930	630	93
Strawberry	274	190	143	Folsom	1,010	791	107
Tahoe	732	562	122	Isabella	570	133	67
Utah	884	874	140	McClure	1,026	619	100
Willard Bay	293	175	---	Millerton	521	373	101
				Oroville	3,484	3,315	114
				Pine Flat	1,013	558	84
				Shasta	4,500	4,298	102

Reservoir Storage Data Provided by Bureau of Reclamation, Corps of Engineers, Geological Survey, and water using organizations. Data from California and British Columbia provided by Department of Water Resources and Department of Lands, Forests and Water Resources, respectively.

Water supplies will be plentiful with significant carryover reservoir storage available for next year.

## GREAT BASIN

With the exception of a few watersheds in Oregon's Lake County and Harney Basin, all remaining watersheds of the Great Basin hold an above average snowpack. With reservoir storage in Utah and Nevada averaging a third above normal, excellent water supplies are assured next summer for all areas of the Basin other than in Oregon.

The outlook remains poor in Oregon for the Silvies River near Burns and the Chewaucan near Paisley (both forecast at 47 percent of average). Donner und Blitzen near Frenchglen and Deep Creek above Adel, Oregon will both yield within 5 percent of average.

In Utah snow cover ranged from near average on the upper Bear River to over 10 times average at some southern snow courses. Most southern watersheds have twice their normal pack. Watersheds in northern Utah, where snow is two to three times average or higher, include the Ogden, Little Bear and the Oquirrh Mountains near Tooele and Vernon.

In Nevada, remaining snowmelt runoff of the Humboldt River at Palisades is expected to be about a fourth above normal. Streamflow along the east slope of the Sierra is predicted to range from 120 percent on the West Carson River to 142 percent on the Little Truckee River, with all other stations in between. Streamflow in the Humboldt and Owyhee drainages is generally predicted to range between 115 and 135 percent of normal. Small streams in the Surprise Valley are forecast to produce 25 to 50 percent above average.

Forecasts for Utah streams range from slightly above average on the Logan River in the north to over twice average on southern watersheds. Streams draining from the Oquirrh Mountains will flow at two and a half to three times their average amounts. In the south, melting of snow from low elevation watersheds near Enterprise has already caused some flooding of cropland. More high water is expected from the heavy snowpack areas.

Outlook for California's Owens Valley continues very good, with the Owens River forecast to yield nearly a fourth more than normal.

## COLUMBIA BASIN

Streamflow prospects for this summer are among the lowest in recent years for most areas of the Basin. While storage in most reservoirs remains above average, because of the low inflow that will occur, a number of both power and irrigation reservoirs are not

expected to fill. Water shortages will be experienced in many smaller areas above reservoir storage facilities, in areas where storage facilities are inadequate, and where water users have limited storage rights. Shortages will be particularly noticeable during late summer months unless abnormally heavy rains come at that time.

In spite of reduced snowmelt resulting from cool April temperatures, precipitation for the month was light enough to offset its effect and leave the snowpack in most areas of the Columbia Basin at a lower value percentage-wise than it was a month ago.

The British Columbia Water Resources Service reports that the snow in the Columbia Basin ranges from a low of 60 percent of average on the Similkameen to a high of 80 percent on the upper Columbia above Revelstoke. The pack is similar (60 to 80 percent normal) on the following United States watersheds: Chelan, Methow and Kettle in Washington; Flathead, Blackfoot, upper Clark Fork and Bitterroot in Montana; upper Salmon, Payette, Boise, Big and Little Wood in Idaho, and the Owyhee in Idaho and Oregon. Remaining watersheds in Washington, Oregon, central and northern Idaho, and Montana's lower Clark Fork have 60 percent of average or less, with most of these watersheds having snowpacks near 30 to 50 percent average.

Above normal snow (10 to 40 percent above) lies on smaller watersheds in Nevada and on the Teton River in eastern Idaho. Snow on remaining areas of the upper Snake River in eastern Idaho and Wyoming was near 5 to 15 percent below normal.

Most streams in Oregon, Washington, the northern half of Idaho and western Montana will only yield about 40 to 70 percent of their average amounts. Highest forecast is for Wyoming's Salt River at 21 percent above normal. Although southern tributaries to the Snake will generally supply near average to 10 percent above, contribution from the northern tributaries is down so that flow of the Snake at Weiser will be near two-thirds normal.

Flow of the Columbia River at The Dalles is expected to be about three-fourths of its normal amount.

## ALASKA

Warm April weather melted an abnormally great amount of the lower elevation snowpack in Alaska. Many snow courses are now bare. At higher elevations the melting process has not started. Most areas now have only a third to two-thirds of the amount of snow that was on the ground a year ago. However, these regions have from 60 to 90 percent of their normal May 1 snowpack.

Near average conditions exist on the Upper Yukon and Koyukuk with above normal snow at higher elevations near Juneau. Elsewhere in the state the May 1 snowpack is well below average.

Streamflow forecasts have been revised downward. May-June yield of the Chena and Salcha rivers is now forecasted to be 104 and 99 percent of average, respectively.

## CALIFORNIA

The California Department of Water Resources, coordinating agency for snow surveys and water supply forecasting in California, reports that although statewide only 20 percent of average precipitation was received during April; an above average snowpack will provide runoff ranging from near normal to well above normal amounts throughout the State.

May snow surveys show that the snowpack, accumulated during early season storms, ranges from 115 percent of average in Sacramento Valley watersheds, to 165 percent of average in San Joaquin Valley headwater areas. Data from automatic snow sensors indicates that snowmelt depletion rates at the end of April varied from a few tenths of an inch per week at the higher elevations, to about eight inches per week in the 6,000-to 8,000-foot elevation band. Melt rates are now increasing as more persistent warming has begun. Seasonal peak snowmelt flows have not yet occurred on the major Central Valley streams.

Precipitation during April was meager, with many valley stations reporting less than 15 percent of average amounts for the month. Precipitation stations in the Sacramento Valley, which normally are expected to receive 3 to 5 inches in April, received less than half an inch.

Statewide precipitation for the water year to date is 120 percent of average, reflecting the heavy contributions during earlier months. Only the North Coast area is slightly below average for the October 1 to date period, but precipitation over the remainder of the State ranges from 110 percent of average in the Colorado Desert area, to 160 percent in the Central Coastal area for the water year.

Runoff in April throughout the Sacramento Valley was below average due to the meager precipitation. In the San Joaquin Valley, runoff was near or above average in all streams. The most noticeable increases in stage occurred during the last week of April as slightly warmer weather permitted sustained snowmelt. Statewide values ranged from 40 percent of average in San Francisco Bay Area streams to 110 percent in the Tulare Lake Basin of the Lower San Joaquin Valley. On a water year basis, all streams in the State have produced

average or above average flows since October 1, ranging from normal in the South Coastal area to a high of 205 percent in the Central Coastal area.

Reservoir storage is average on a statewide basis, but varies from 75 percent of average in the Lahontan area to 130 percent in the South Coastal area. Storage is now slightly above average throughout the Sacramento Valley, but about 10 percent below average in the San Joaquin Valley. However, most major reservoirs are expected to fill this spring as flood reservation criteria are no longer needed. Storage in interstate reservoirs on the Colorado River is 125 percent of average for May 1 and normal inflows are expected this season.

Forecasts of streamflow have been reduced from those made one month ago due to the lack of precipitation during April. In the Sacramento Valley, runoff forecasts for the April through July period now range from 90 percent of average for the McCloud River to 145 percent for the Cosumnes River. San Joaquin Valley streams are forecasted to produce from 110 percent of average for the Tuolumne River to 220 percent for the Tule River. Forecasts of water year runoff remain above average for all streams tributary to the Central Valley.





# EXPLANATION of STREAMFLOW FORECASTS

All flows are observed flows except as adjusted for: 1/ Storage change in Lake Shoshone. 2/ Storage change in Lima and Clark Canyon reservoirs. 3/ Storage change in Hebgen Lake. 4/ Storage change in Gibson Reservoir and measured diversions. 5/ Storage change in Two Medicine, Four Horns, Lake Francis and Swift reservoirs. 6/ Storage change in Canyon Ferry and Tiber reservoirs. 7/ Changes as indicated in (6/), (8/), plus storage change in Fort Peck. 8/ Storage change in Boysen, Buffalo Bill and Yellowtail reservoirs. 9/ Storage change in Buffalo Bill Reservoir plus Heart Mountain diversion. 10/ Storage change in Pilot Butte and Bull Lake reservoirs plus Wyoming canal diversion.

11/ Changes indicated in (10/) plus storage change in Boysen Reservoir. 12/ Plus diversions to Cache LaPoudre. 13/ Plus by-pass to power plants. 14/ Minus diversion thru Gumlick Tunnel. 15/ Storage change in Price Reservoir. 16/ Minus diversions from North Platte, Laramie and Colorado rivers plus measured diversions above station. 17/ Storage change in Clear Creek, Twin Lakes and Turquoise reservoirs minus diversions from Colorado River. 18/ Storage change in Rio Grande, Santa Maria and Continental reservoirs. 19/ Storage change in El Vado and Abiquiu reservoirs. 20/ Storage change in Platoro Reservoir.

21/ Storage change in Grandby Reservoir as furnished by U.S.B.R. plus diversions by Adams Tunnel and Grand River Ditch. 22/ Changes as indicated in (21/) plus diversions thru Roberts, Gumlick and Moffat tunnels and storage change in Dillon, Homestake, Williams Fork, Green Mountain and Willow Creek reservoirs. 23/ Changes indicated in (22/) and (26/). 24/ Storage change in Blue Mesa Reservoir. 25/ Changes indicated in (24/), (30/) and (35/) and storage change in Lake Powell. 26/ Diversions to Arkansas River plus storage change in Ruedi Reservoir. 27/ (Inflow record as computed by U. S. Bureau of Reclamation.) 28/ Storage change in Taylor, Blue Mesa and Morrow Point reservoirs. 29/ Storage change in Fontenelle Reservoir. 30/ Storage change in Flaming Gorge Reservoir.

31/ Plus diversion through Duchesne Tunnel. 32/ Storage change in Moon Lake Reservoir. 33/ Storage change in Scofield Reservoir. 34/ Storage change in Joe's Valley Reservoir. 35/ Storage change in Navajo Reservoir. 36/ Plus U. P. & L. Co. tailrace and Logan, Hyde Park and Smithfield canals. 37/ Minus diversions thru Duchesne Tunnel and Weber-Provo Canal. 38/ Storage change in Lake Tahoe and Boca reservoirs (Forecast by Truckee Basin Committee.) 39/ Storage change in Bridgeport Reservoir. 40/ Corrected for major upstream impairments -- represents simulated natural flow conditions.

41/ Storage change in Priest Lake. 42/ Storage change in Coeur d'Alene Lake and diversions by Spokane Valley Farms Co. and Rathrum Prairie canals. 43/ Storage change in Lake Chelan. 44/ Storage change in Jackson Lake. 45/ Storage change in Jackson Lake and Palisade reservoirs. 46/ Storage change in Jackson Lake, Palisades, Island Park, Henry's Lake, Grassy Lake plus diversions between Heise and Blackfoot. 47/ Storage change in Henry's Lake and Island Park reservoirs. 48/ Storage change in MacKay Reservoir and diversion in Sharp Ditch. 49/ Combined flow Big Wood near Bellevue and Camas Creek near Blaine. 50/ Storage change in Arrowrock, Anderson Ranch and Lucky Peak reservoirs.

51/ Storage change in Wild Horse Reservoir. 52/ Storage change in Cascade and Deadwood reservoirs. 53/ Storage change in Keechelus, Kachess and CleElum reservoirs plus diversion by Kittitas Canal. 54/ Changes indicated in (52/) plus storage change in Bumping and Rimrock Lakes plus diversion by Roza, Union Gap, New Reservation, Old Reservation and Sunrise canals. 55/ Storage change in Bumping and Rimrock lakes and diversions by Tieton, Selah Valley, Wapatox canals and City of Yakima. 56/ Storage change in Merwin, Yale and Swift reservoirs. 57/ Storage change in Mayfield Reservoir.

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